

# College of Engineering News

February 14, 2018

Georgia Southern University

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## Masoud Davari participates in ECE Research Colloquium

February 14, 2018

Masoud Davari, assistant professor of Electrical and Computer Engineering, presented a fascinating talk about his research on “Integrated Power and Energy Systems for Advanced Smart Grid Technologies” at the Department of Electrical & Computer Engineering’s Research Colloquium on Feb. 9, 2018. The abstract of his talk follows. The department’s Colloquium provides an opportunity for its faculty to share their research with colleagues and students throughout the University. The department will host two more presentations during spring semester: Dr. Weinan Gao will present in the area of Controls on March 9, 2018, and Dr. Omid Semiari will present in the area of Communications on April 6, 2018.

### **Integrated Power and Energy Systems for Advanced Smart-Grids Technologies**

Modernized microgrid (MMG) is an essential section of the energy sector and the power industry under the umbrella of smart grids. MMG closely mimics the terrestrial power system but it has its own unique characteristics (including variable frequency; power sharing vs power scheduling; lack of time-scale separation; short electrical distances; and tighter controls) which must be effectively addressed. In this research colloquium, the fully integrated power and energy system (FIPES) concept will be introduced and investigated as a new trend in the MMG integration. The FIPES-based MMGs will be able to supply demanding and high-power loads at smaller number of prime movers; more flexibility in the arrangements; improved reliability; better power quality; more convenience in renewable distributed energy resource (DER) integration; and increased number of integrated energy storage system (ESS) units to benefit from their dynamic response and/or energy arbitrage. They will be able to achieve the power system design and performance goals at a lower hardware capacity; lower ESS requirements; hybrid ac/dc structure; and more sophisticated power electronic converters based on fast switching technologies, simultaneously resulting in high frequency, high power, and high power-density. In this regard, development of advanced control and protection systems for FIPES-based MMGs is the most urgent task. This is a challenging task due to the architectural aspects and components diversity and due to the characteristics specified above. This research colloquium will address those aspects, robust and advanced controls, and protection systems for FIPES-based MMGs. Issues such as integrating strong coupling dynamics; extending to large frequency-variable conditions; tolerating critical system and sensor faults; augmenting system robustness with cybersecurity aspects; developing nonlinear and strong controls; and enhancing hardware-in-the-loop (HIL) digital simulations will be considered and addressed.

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## Record numbers of students on Dean’s and President’s Lists

February 14, 2018

A record number of College of Engineering & Computing students have earned the distinction of being named to the President’s List (236 students) and the Dean’s List (541 students). This is a very impressive 21.6% of all students enrolled in the College for Fall 2017. The deans, chairs and faculty of the College are extremely proud of all of our hard-working students!

During any term, an undergraduate or post baccalaureate student enrolled in 12 or more GPA hours and making a term GPA of 4.0 are placed on the President’s List, and those making a term GPA of 3.5 – 3.9 are placed on the Dean’s List.